

## **PCA 2450**

### **Two-Channel Processor-Controlled Power Amplifier**

- Exclusive Dynamic Signal Processing™ (DSP) circuit ensures audibly superior sound
- Audio Processor Control™ (APC) circuit prevents amplifier clipping
- Thermal Brain Circuit™ (TBC) helps prevent voice-coil burnouts
- High-power, high-current MOSFET output devices and huge power supply ensure tremendous speaker-playing ability
- Three-year parts-and-labor warranty

#### **SPECIFICATIONS**

##### **Conditions:**

1. 0 dBu = 0.775 V rms.
2. Dual-mode ratings are for each channel, both operating, unless noted.
3. 120-volt ac line voltage maintained throughout testing.

##### **Continuous Rated Output Power**

(20-20,000 Hz at <1% THD, both channels driven per EIA RS-490),

**Dual Mode, 4 Ohms:**

440 watts

**Bridged Mode, 8 Ohms:**

920 watts

**Dual Mode, 8 Ohms:**

320 watts

##### **Continuous Rated Output Power**

(1 kHz, 1% THD, both channels driven per EIA RS-490),

**Dual Mode, 4 Ohms:**

520 watts

**Bridged Mode, 8 Ohms:**

1040 watts

**Dual Mode, 8 Ohms:**

360 watts

##### **Dynamic Headroom**

(reference 1 kHz, THD = 1%),

**Dual Mode, 4 Ohms:**

0.97 dB

**Bridged Mode, 8 Ohms:**

0.97 dB

**Dual Mode, 8 Ohms:**

1.52 dB

##### **Power Bandwidth (+0/-1 dB, reference 1 kHz),**

**Dual Mode, 4 Ohms:**

<10 Hz/30 kHz at 400 watts

**Bridged Mode, 8 Ohms:**

<10 Hz/30 kHz at 800 watts

**Dual Mode, 8 Ohms:**

<10 Hz/37 kHz at 250 watts

##### **Frequency Response (-3 dB, reference 1 kHz/1 watt):**

3.5-70,000 Hz

##### **Voltage Gain (reference 1 kHz),**

**Dual Mode:**

35.2 dB

**Bridged Mode:**

41.2 dB

##### **Input Sensitivity (reference 1 kHz),**

**Dual Mode, for 400 Watts into 4 Ohms:**

650 mV

**Bridged Mode, for 800 Watts into**

**8 Ohms:**

650 mV

**Dual Mode, for 250 Watts into 8 Ohms:**

775 mV

##### **Maximum Input Level (reference 1 kHz):**

+28 dBu (19.5 V rms)

##### **Input Impedance (per channel, 20-20,000 Hz),**

**Balanced:**

20 kilohms

**Unbalanced:**

10 kilohms

##### **Phase Response (at rated power, any mode),**

**20 Hz:**

+25 degrees

**20 kHz:**

-30 degrees

##### **THD Plus Noise at 1 kHz,**

**Dual Mode, 4 Ohms:<sup>1</sup>**

<0.02% at 400 watts

**Bridged Mode, 8 Ohms:**

<0.03% at 800 watts

**Dual Mode, 8 Ohms:**

<0.01% at 250 watts

##### **IMD (SMPTE) (60 Hz/7 kHz, typical),**

**Dual Mode, 4 Ohms:**

<0.03%

**Bridged Mode, 8 Ohms:**

<0.04%

**Dual Mode, 8 Ohms:**

<0.02%

##### **TIM (DIM 100),**

**Dual Mode, 4 Ohms:**

<0.03% at 400 watts

**Bridged Mode, 8 Ohms:**

<0.04% at 800 watts

**Dual Mode, 8 Ohms:**

<0.02% at 250 watts

##### **Rise Time (10% to 90% at rated output power), Any Mode:**

<2 µsec

##### **Slew Rate, Any Mode:**

>70 V/µsec

##### **Damping Factor, Any Mode:**

>300

##### **Noise (below rated output power, A-weighted, any mode):**

>101 dB

##### **Amplifier Protection:**

Excessive output voltage; shorted loads;  
excessive phase shift; rf interference;  
overtemperature

##### **Load Protection:**

Startup/shutdown transients; dc fault;  
infrasonic signals; low ac line voltage;  
nonlinear signal limiter; voice-coil thermal  
overload

##### **Output Topology:**

True complementary symmetry

##### **Output Type,**

**Dual Mode:**

Unbalanced, each channel

**Bridged Mode:**

Balanced

1. See Figure 3 for 1-kHz THD plus noise versus output power.

FIGURE 1 — PCA 2450 Overall Dimensions

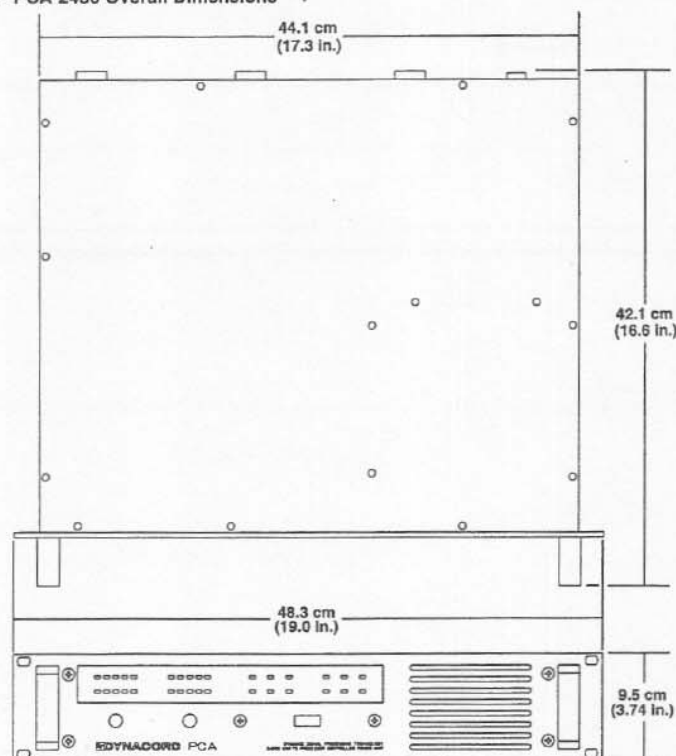


FIGURE 2 — PCA 2450 THD Plus Noise at 1 kHz, Typical  
(30-kHz measurement bandwidth,  
both channels operating, 8-ohm loads)

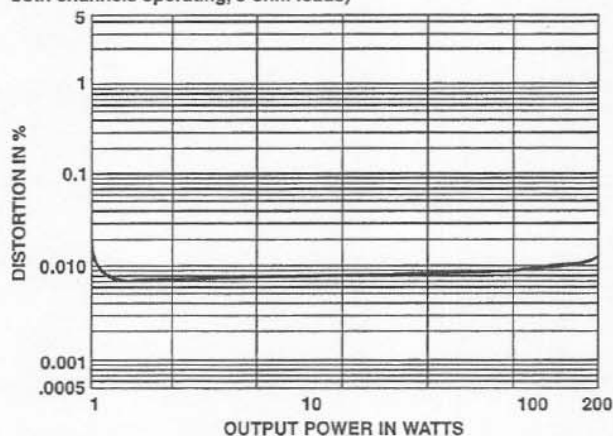
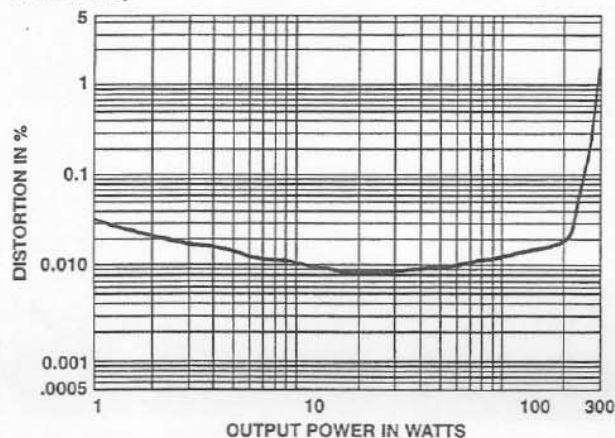


FIGURE 3 — PCA 2450 Intermodulation Distortion (IMD)  
(SMPTE method, 60 Hz/7 kHz, both channels operating,  
8-ohm loads)



#### Output Devices:

Eight high-power MOSFET devices

#### Controls and Switches:

Input level controls, front; power switch, front; input mode switch, rear; output mode switch, rear; ground-lift switch, rear; DSP corner frequency, internal

#### Front-Panel Indicators, Each Channel:

Five-segment LED ladder for input levels; five-segment LED ladder for output levels; processor-on LED; processor-active LED; Thermal Brain Circuit™ LED; stereo and mono LED's ("mono" indicates paralleled inputs); BTL LED (indicates bridged mono output)

#### Connections,

##### Input:

3-pin XLR type, balanced, pin 2 positive; 1/4-inch phone jack, unbalanced

##### Output:

Neutrik Speakon® NL4MP for left, right and bridged outputs; 3-pin XLR type for signal

##### Power:

1.8-m (6.0-ft), three-wire 16-gauge power cord

##### Operating Voltage:

120 volts, 60 Hz ac

#### Power Consumption (both channels operating in dual mode),

##### At Maximum Mid-Band Output Power,

###### 8 Ohms:

1,175 watts

###### 4 Ohms:

1,950 watts

##### At 250 W per Channel into 8 Ohms:

1,000 watts

##### At 400 W per Channel into 4 Ohms:

1,700 watts

##### At 25 W per Channel into 8 Ohms:

300 watts

##### At 40 W per Channel into 4 Ohms:

550 watts

#### Dimensions,

##### Height:

9.5 cm (3.74 in.)

##### Width:

48.3 cm (19.0 in.)

##### Depth:

42.1 cm (16.6 in.)

#### Color

Dark gray

#### Shipping Weight;

19.1 kg (42.0 lb)

#### Net Weight:

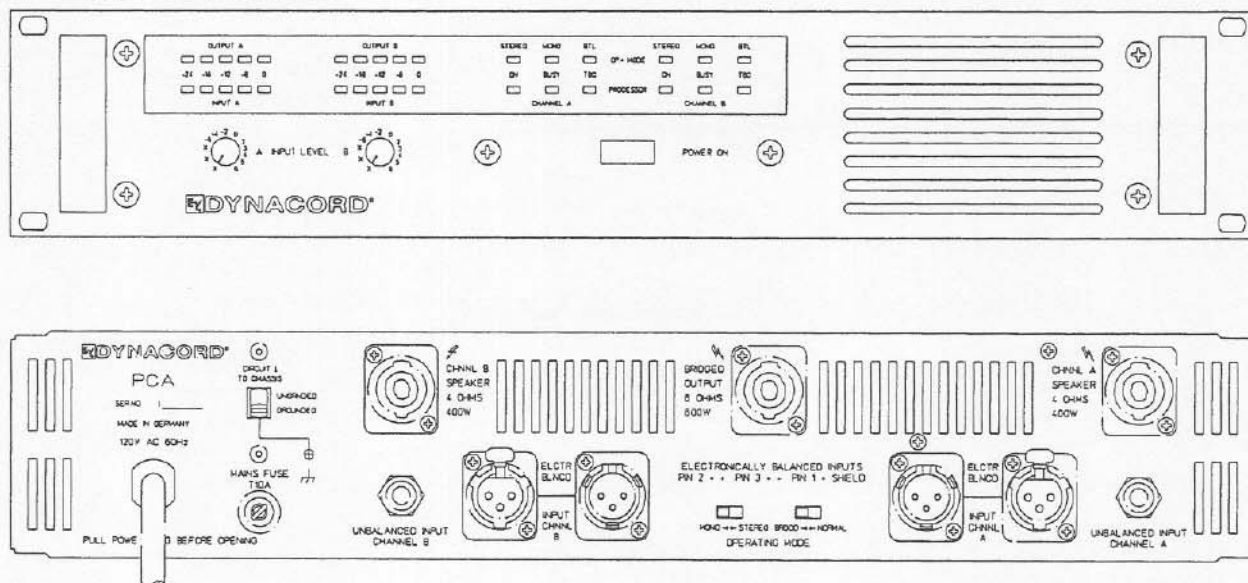
16.5 kg (36.3 lb)

#### DESCRIPTION

The EV/Dynacord PCA 2450 stereo power amplifier is a very-high-quality and unique power amplifier. Its proprietary processing circuitry enables the amplifier to work with speakers to elicit their maximum performance while preventing clipping and voice-coil overheating. Its powerful MOSFET amplifiers and large, heavy-duty power supply give the PCA 2450 tremendous speaker-playing ability.

Each channel delivers 320 watts of continuous average power into 8 ohms or 440 watts into 4 ohms over the full audio frequency range. In bridged mode, the amplifier can deliver more than 920 watts into 8 ohms at less than 1% THD. The power supply, with its large toroidal

FIGURE 4 — PCA 2450 Front and Rear Panels



transformer, gives the amplifier impressive current output and headroom.

The PCA 2450 contains special processing circuits designed to augment the amplifier's performance.

The first of these processing circuits, called Dynamic Signal Processing™ (DSP), is a low-pass network with second-order shelving equalization that helps linearize the phase and frequency response of low-frequency loudspeakers. The DSP circuit works in the frequency range where the speaker needs assistance in accurately following the input signal. The corner frequencies of the low-pass network can be internally optimized via a two-position switch on each channel for typical wide-range professional speaker systems or studio monitors and large bass horns.

The PCA 2450 also has Audio Processor Control™ (APC). The APC circuit is a very fast audio processor that continuously monitors the internal and external operating conditions of the amplifier and controls the input level of the amplifier to ensure that the amplifier will not be driven into clipping.

In conjunction with the audio processors, the amplifier contains a Thermal Brain Circuit™ (TBC) which simulates the thermal behavior of speaker voice coils and limits the energy supplied to the speaker in case of continuous peaks and danger of thermal damage. Both the APC and TBC circuits operate while keeping the dynamic range of the input signal intact and without serious impact on sound quality.

The PCA 2450 has sixteen high-power MOSFET output devices which are protected from heat damage by a separate temperature-sensitive fan for each channel. The massive, extruded aluminum heatsink is engineered to minimize thermal gradients and ensure that all transistors operate at approximately the same temperature.

A complete, multifunction display keeps the user constantly informed about the operating mode and levels of the amplifier. Separate displays for input and output levels of each channel, processor activity and operating mode—stereo or dual monophonic (inputs paralleled) and bridged mono output—make it easy to see what the amplifier is doing.

The PCA 2450 has electronically balanced XLR-type inputs and unbalanced 1/4-inch phone-jack inputs. The female XLR-type input has a male XLR-type connector in parallel, for easy interconnection of amplifiers. Its speaker outputs are Neutrik Speakon® connectors which provide a sturdy, reliable connection and allow use of heavy wire for loss-free signal transmission.

The EV/Dynacord PCA 2450 is the choice for serious professional amplification needs which require optimum sound quality, speaker protection and the highest level of construction quality and long-term reliability.

Overall dimensions are shown in Figure 1. The front and rear panels are shown in Figure 4. Figure 2 displays 1-kHz THD plus noise versus output power. Figure 3 shows intermodulation distortion (IMD) versus output power.

#### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The power amplifier shall be a dual-channel model of solid-state design employing high-power MOSFETS in a true-complementary-symmetry output circuit and capable of operating from a 120/200/220/240-V, 50/60-Hz ac line. The amplifier shall contain proprietary processing circuits designed to ameliorate low-frequency phase and frequency response problems in loudspeakers, protect against voice-coil burnouts and prevent amplifier clipping. The amplifier shall contain sensing circuitry to provide protection for the output transistors against overtemperature, excessive output

voltage, radio-frequency interference, shorted loads and excessive output phase shift. The load shall be similarly protected against infrasonic signals, startup/shutdown transients, low ac voltage and dc. Rear-mounted controls shall include two-position switches for the stereo or dual monophonic mode (inputs paralleled), stereo or bridged mono output, and chassis ground lift.

Rear-mounted connectors shall include XLR-type balanced inputs and signal outputs; 1/4-inch unbalanced inputs; and four-pole Neutrik Speakon® output connectors for left, right and bridged outputs. Front-mounted controls shall include individual input level controls for each channel and a power on/off switch. Front-mounted indicators shall include five-segment LED ladders for both input and output levels for each channel; processor on; processor active; Thermal Brain Circuit™ (TBC) active; and stereo/mono and BTL LED's for each channel.

The power amplifier shall meet the following performance criteria: maximum input voltage, +28 dBu (19.5 V rms); input voltage for 400 watts into 4 ohms or 800 watts into 8 ohms mono bridged, 650 mV; for 250 watts into 8 ohms, 775 mV; continuous rated output power from 20 Hz to 20 kHz at less than 1% THD, 440 watts per channel into 4 ohms, 320 watts per channel into 8 ohms, 920 watts mono bridged into 8 ohms; frequency response at 1 watt, 3.5-70,000 Hz, -3 dB; voltage gain, 35.2 dB in dual mode and 41.2 dB in bridged mode; hum and noise at least 101 dB (A-weighted) below continuous rated output power; damping factor at 1 kHz in dual mode, greater than 300; transient intermodulation distortion (DIM 100) in dual mode into 8 ohms, less than 0.01%; intermodulation distortion (SMPTE, 60 Hz/7 kHz) in dual mode into 8 ohms, less than 0.02%, typical; crosstalk, greater than 75 dB below rated output power.

Enclosure: rack-mounted chassis with handles; 16-gauge steel bottom/sides; 1/16-in. (16-mm) aluminum top/back. Dimensions: 9.5 cm x 48.3 cm x 42.1 cm (3.74 in. x 19.0 in. x 16.6 in.) HWD. Net weight: 16.5 kg (36.3 lb).

The power amplifier shall be the EV/Dynacord PCA 2450.

#### **WARRANTY (Limited)**

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or

owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives. Obtaining Warranty Service: To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831 or 800/234-6831) and/or Electro-Voice West, at 8234 Doe Avenue, Visalia, CA 93291 (209/651-7777 or 800/825-1242). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for

any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**Electro-Voice and EV/Dynacord Electronics** are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (616/695-6831 or 800/234-6831).

Specifications subject to change without notice.



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